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X Geng, AB Whinston - 2000 - doi.ieeecomputersociety.org

... under the attacker's control, the accumulated resources can ... RSA's Client Puzzles algorithm (see <http://www.rsasecurity> ... solve a small puzzle before establishing ...

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W Feng - Proceedings of the ACM SIGCOMM workshop on Future directions ..., 2003 - portal.acm.org

... number of credits accumulated by individual ... Cryptographic Defense Against Connection Depletion," in NDSS ... Authentication with Client Puzzles," Lecture Notes ...

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... incomplete connections would be accumulated by the ... PKI could effectively prevent connection depletion or other ... achieved in using a client puzzle mechanism in ...

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G Price - Proceedings of the 9th International Conference on ..., 2003 - Springer

... unsolicited e-mails, for which the accumulated cost would ... moderately-hard functions required for their puzzle schemes ... first to introduce the term client puzzle ...

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... Alter- natively, some accumulated value based on multiple received ... a key exchange message with a "client puzzle" ... would have to solve the puzzle—which would ...

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... Michael A. Caloyannides Demystifying the IPsec Puzzle, Sheila Frankel ... of any trademark or service mark ... Features 61 3.1 Implementing ATM Connection Policies 62 ...

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... The structure is client-server based in which the server obtains events and dispatches them to clients (patterns) which implement the matching procedure ...

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LN Foner - 1999 - [foner.www.media.mit.edu](#)

... 96 5.7.1 Denial of service privacy sur- rounding doctor/patient and attorney/client information which ... latter need not require a real-time connection for the ...

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[BOOK] [A Free and Ordered Space: The Real World of the University](#)

AB Giamatti - 1988 - [books.google.com](#)

... The net effect since the Second World War is that institu- tions of higher education have lost vital connections to their surrounding institutions. ...

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A GIANI, P THOMPSON - ADVANCES IN COMPUTERS, 2003 - [ists.dartmouth.edu](#)

... This is in contrast to denial of service (DOS) and other kinds of well-known attacks that operate solely within the computer and network infrastructure. ...

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WJ Buchholtz - Professional Communication, IEEE Transactions on, 1989 - [ieeexplore.ieee.org](#)

... reflect on the immense wealth accumulated by certain ... through the ex- cellence of her Harvard connection. ... is hoping that the prospective client thinks Harvard ...

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A Ghosh - 2002 - [iclr.org](#)

... 164 C.1.2 HTTP - single connection How many people have actually written an ftp client or daemon? Consider the most widely used protocol on ...

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WD Grover - Proceedings of the IEEE, 1997 - [ieeexplore.ieee.org](#)

... cross-connect system (DCS) in a client-server-type ... is the act of making a bidirectional connection through a ... is fully operational but is not in service and is ...

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LR Bachman - 2003 - [books.google.com](#)

... structure. Connections between components and among sys- tems in general constitute another aspect of physical inte- gration. This ...

[Cited by 5](#) - [Related Articles](#) - [Web Search](#)

[A SYSTEM AND METHOD FOR ESTABLISHING A PRIVACY COMMUNICATION PATH](#) - [all 4 versions »](#)

SJ ENGBERG - EP Patent 1,290,599, 2003 - [freepatentsonline.com](#)

... an embodiment implementation, Fig 2:"200 Central Entities"shows a logical connection

diagram between ... When CLIENT buying power are accumulated in (perhaps ...

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T Heath - 1984 - John Wiley & Sons

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S Pulses - Standard Handbook of Video and Television Engineering, 2003 - McGraw-Hill Professional

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[BOOK] **The Built, the Unbuilt, and the Unbuildable: In Pursuit of Architectural Meaning**

R Harbison - 1991 - books.google.com

... First of all, until recently no client would have ventured ... mocked up worlds, created in the service of architecture ... maze, they are not especially puzzle-like. ...

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... in manipulating precise Cartesian coordinates, but they exhibit no connection with the body ... with all the expected anal implications, is to service, trash removal ...

[Cited by 68](#) - [Related Articles](#) - [Web Search](#)

Key authors: [X Geng](#) - [S Kumar](#) - [V Padmanabhan](#) - [A Whinston](#) - [L Foner](#)

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[DOS-resistant authentication with client puzzles](#) - all 20 versions »

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... Client puzzles are an effective means of countering a denial-of-service ... Client puzzles: A cryptographic defense against connection depletion attacks ...

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AD Wood, JA Stankovic - 2002 - doi.ieeecs.org

... the puzzles easily, and storage of client-specific information ... the server could scale the puzzles to require ... An existing connection between two end points can ...

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[PDF] [Hashcash-A Denial of Service Counter-Measure](#) - all 19 versions »

A Backus - URL: <http://www.hashcash.org/papers/hashcash.pdf>, August, 2002 - cypherspace.org

... in the face of connection-depletion attacks. ... protocols with computationally expensive connection establishment phases ... but the analogous client-puzzle system was ...

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[PS] [Defending against denial-of-service attacks with puzzle auctions](#) - all 6 versions »

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... connection depletion attacks appears in [18]. Client puzzles have also been proposed to similarly protect authentication protocols against denial-of-service [2 ...

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... popular recently for resisting denial-of-service ... Juels, J. Brainard, "Client Puzzles: A Cryptographic Defense against Connection Depletion Attacks", NDSS ...

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... instead of in storing the SYN messages in the connection queue. ... in its initial stages without leaving itself vulnerable to denial of service attacks that ...
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... because even legitimate users may drop puzzles due to ... Similarly, we allow a client that answers a CAPTCHA ... first data packet of the TCP connection will contain ...
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... Instead of randomly generating a new puzzle value , the ... it as keyed hash (eg, HMAC) of the connection parameters, nonces ... (pseudo-)random to the client, yet the ...
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... Network Denial-of-Service (DoS) attacks [26] pose an increasing threat to both ... to

be idle in the middle of an active connection, the client module will ...

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[Sustaining Availability of Web Services under Distributed Denial of Service Attacks](#) - all 12 versions »

J Xu, W Lee - 2003 - doi.ieeeecs.org

... SYN cookie, the firewall will establish a connection between a web ... sends a packet back to a client, the source ... Denial of service incidents began to be reported ...

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... A distributed denial-of-service attack deploys multiple attack ... EW: Exploited Weakness to Deny Service DDoS attacks ... of substantial space in a connection queue im ...

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... The actual denial of service attack phase occurs ... Their approach uses a client puzzle protocol designed to allow servers to accept connection requests from ...

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[A general attack model on hash-based client puzzles - all 2 versions »](#)

G Price - Proceedings of the 9th International Conference on ... , 2003 - Springer

... hard functions required for their puzzle schemes. ... first to introduce the term client puzzle ... s work defends against connection depletion attacks, specifically ...

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[A public-key based authentication and key establishment protocol coupled with a client puzzle - all 5 versions »](#)

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... they claimed that PKI could effectively prevent connection depletion or other denial-of-service ... could be achieved in using a client puzzle mechanism in the ...

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... Because the most frequent cause of failed connections will be ... a key exchange message with a "client puzzle ... to, would have to solve the puzzle—which would ...

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... LAN connection), potentially placing legitimate users at a ... and share puzzles, a legitimate client can quickly ... the pit-falls of previous puzzle schemes: it ...

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... 2 1.1. Denial-of-Service Attacks ... known as client puzzles. 2.1. ... attacks on systems. Occasionally, these attacks are referred to as connection-depletion ...

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... a preconfigured policy, eg, the rate of connections exceed 10,000 ... tunnel towards

A s . A virtual client puzzle is simulated ... ε c s and the client traffic from ...

[Cited by 10](#) - [Related Articles](#) - [Web Search](#)

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... Alternatively, a connection to such a client can be ... at a higher priority by omitting sending a puzzle. ... a service request received from the client terminal 100 ...

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... Puzzle based methods [11, 12] impose heavily overhead to ... request had been forwarded by the client detector at ... The pending half-open connection on the server S ...

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... packet has been received. Alternatively, some accumulated value based on multiple received packets may be returned. For example, if ...

[Cited by 6](#) - [Related Articles](#) - [View as HTML](#) - [Web Search](#)

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Y Xiang, W Zhou, M Chowdhury - Australia: Deakin University, 2004 - [deakin.edu.au](#)

... When a connection is established between two UDP services, each ... that case it also falls in a denial of service. ... client is much higher than from client to server ...

[Cited by 22](#) - [Related Articles](#) - [View as HTML](#) - [Web Search](#)

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... of individual mesh routers will not affect network connection. ... network users, and iii) launch denial-of-service ... The WMN should maintain service availability ...

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... may employ zombies in Distributed Denial-of-Service ... agreed to provide the corresponding level of service. ... refuses to return the accumulated capability, then ...

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... generic token and immediately open a connection to Bob ... Solving the puzzle requires the client to find a ... problem (1) an interesting computational puzzle for our ...

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TJ Giuli, P Maniatis, M Baker, DSH Rosenthal, M ... - Arxiv preprint cs.CR/0405111, 2004 - [usenix.org](#)

... session, either keeping the same TCP connection from message to ... CPU-bound schemes

such as "client puzzles" [12] for ... the nature and types of denial of service ...

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[An end-middle-end approach to connection establishment - all 10 versions »](#)

S Guha, P Francis - 2007 - [portal.acm.org](#)

... If the connection breaks, for instance because of mobility or firewall crashing ... by

extending their host names with user, application, and service names, and by ...

[Cited by 3](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

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... Denial of Service (DoS) attacks are among the most ... either maintaining the underlying

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H Rowaihy, W Enck, P McDaniel, T La Porta - [Network and Security Research Center, Department of Computer ...](#), 2005 - [nsr.cse.psu.edu](#)

... admission control system vets joining nodes via client puzzles. ... These puzzle challenges

protect neighbors from a ... network to reestablish their connection to the ...

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... establish a series of half-open connections constitutes abnormal ... adversary to achieve
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... [P9] is a result of collective work with ... clients to solve small cryptographic puzzles
before it ... Similar, slightly more complex, client puzzles have previously ...
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connection and waits ... 3. The client sends a segment acknowledging the server's ISN ...
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... use the secure processor and software puzzles to achieve ... of the processing resources
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... browser software and an Internet connection can be ... over the Internet, which Canadian copyright collective-the Society ... race is a type of client-side application ...

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... There is a lot of collective personal effort directed toward ... occur when it is operating a client process, like ... Host-based denial of service attacks One of the ...

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... the individ- ual perspective or collective human experience ... the ex- cellence of her

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... Advances in miniaturization combined with an insatiable appetite ... easily, and storage of client-specific information ... server could scale the puzzles to require ...

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... of the client, eg by IP spoofing, when combined with other ... Client puzzles: A cryptographic counter- measure against connection depletion attacks. ...

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... prevent connection depletion or other denial-of- service attacks; and, in their

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... been identified as vulnerable to denial-of-service ... generalizes the concept of stateless connection to prevent ... introduced the concept of client puzzle to combat ...

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... Similar, slightly more complex, client puzzles have previously been ... one that has certified the client directly ... Inde- pendent paths can be combined for increased ...

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... something in common with the client puzzle concept in ... verification and another for the client signature verification. ... ideas, however, may be combined as shown ...

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... according to the specific data or service being accessed ... it is not possible to authenticate the client during the ... at the beginning of a connection, because the ...

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... This signature can be combined with the ... Juels and John Brainard, "Client puzzles:

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... since the initiator is typically a relatively anonymous "client," while the ... more
important in the context of recent Internet denial-of-service attacks. ...

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... receives a flow ID from the connection verifier module ... Upon receiving a packet from
the client side, the ... For the same combined hash table size, the probability ...

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... connection depletion attacks appears in [18]. Client puzzles have also been proposed to similarly protect authentication protocols against denial-of-service [2 ...

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... require that clients solve a cryptographic puzzle before server ... has been used to counter connection-depletion attacks [15 ... delay incurred by a client request to ...

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... 10] is similar to the puzzle method, except ... client from launching multiple attacks,
the client workload should ... Furthermore, the responder prevents reuse of SIG ...

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identify connections between different ... 5 Reflection 25 1.6.6 Denial of Service ...

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... location, which form pieces of the over- all puzzle. ... As there is no network connection
state, none needs to ... Client applications can display the name and email ...

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... How can nodes reuse their own on-disk state ... a signifi- cant period of time, the client
likewise removes ... force each node to solve cryptographic puzzles [24] in ...

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... The target reacts unpredictably (eg drops network connections). ... It allows the attacking
client to remote control the ... is set for the IDS jigsaw puzzle to be re ...

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... Furthermore, some protection against denial of service attacks can be ... TLS) protocols
are widely used to secure the connection between a client and a ...

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... display is available, care must be taken to verify that the connection to the ... an authentic secure coprocessor if access to any normal remote service can be ...

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